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Form C-104
Rev. 2/01

CONSTRUCTION VALUE ENGINEERING CONCEPT PROPOSAL
MISSOURI DEPARTMENT OF TRANSPORTATION

Date 01/29/2009

Contract ID 070928-X01 **Job No.** J0P0928

County Madison **Route** 67 **Original Bid Cost** $37,597,624.33

Contractor Emery Sapp & Sons **By** Matthew Oesch

Designed By Matthew Oesch **Phone** (573) 489-9216

VECP 09-07

1. **Description of existing requirements and proposed change(s). Advantages/Disadvantages**

   Five crossovers are required from 1015+00-1100+00 under existing design. Emery Sapp & Sons proposes to remove Crossovers #10 & #11 while widening Crossover #12 to accommodate two lanes of traffic. Temporary crossover and transitions specify use of 4" removable marking tape under exiting design, while Emery Sapp & Sons proposes to use 4" acrylic waterborne paint. Advantages to the proposal include increased cost savings, fewer lane changes, safer travel for motorist, and may help expedite the completion

2. **Estimate of reduction in construction costs.** $115,109.34

3. **Prediction of any effects the proposed change(s) will have on other department costs, such as maintenance and operations.**

   None

4. **Anticipated date for submittal of detailed change(s) of items required by Section 104.6 of the Specifications.**

   _____
   (date)

5. **Deadline for issuing a change order to obtain maximum cost reduction, noting the effect of contract completion time or delivery schedule.**

   03/04/2009 (date) — Provide ample time to grade and prep for Stage 1 prior to paving. (effect)

6. **Dates of any previous or concurrent submission of the same proposal.**

   N/A
   (date and/or dates)

Additional Comments:

A letter with detailed explanations for the crossover elimination, modification, and striping substitutions is to follow. Spreadsheets detailing cost savings and idem removal lists will be included.

***** Portion Below This Line To Be Filled Out by MoDOT *****

Comments:

Matt Malone — 2-9-09

Submitted By Resident Engineer — Date

Comments:

Quantities are estimated at this point.

☒ **Approval Recommended**
☐ **Rejection Recommended**

Mark Shelton — 2-20-09

District Engineer — Date

by Lynelle Lehman

Comments:

☑ **Approval**
☐ **Rejection**

David D. Gehrs — 2-24-09

State Operations Engineer BAW — Date

Distribution: Resident Engineer, District Operations Engineer, State Operations Engineer
*Value Engineering Administrator - *MoDOT, P.O. Box 270, Jefferson City, MO 65102

January 16, 2009

Mr. Matt Malone, R.E.
Missouri Dept. of Transportation
105 Industrial Dr.
Park Hills, MO 63601

RE: Value Engineering Proposal
Rte. 67, Madison County,
Job No. J0P0928

Mr. Malone:
This letter is written in proposition of a Value Engineering Proposal to the traffic control layout, temporary striping, and construction of Crossovers #10, #11, and #12. Emery Sapp& Sons proposes to eliminate Crossovers #10 and #11 while widening Crossover #12 using the necessary material from that of Crossover #11. In addition to crossover alterations, Emery Sapp & Sons proposes to replace the use of 4" Preformed Removable Marking Tape in crossover areas with 4" Acrylic Waterborne Pavement Marking Paint. A total cost savings of $115,109.34 will be incurred by altering Crossover #12, eliminating Crossovers #10 and #11, and converting striping from tape to paint.

Alteration of the existing striping design will increase pavement marking durability and reduce temporary crossover maintenance. A reduction in crossover maintenance produces fewer traffic disturbances allowing safer more timely travel for the public. Acrylic waterborne paint will present a significant cost savings when used in place of preformed removable marking tape.

Under proposal, Crossover #12 will be sufficiently wide enough to support two/way traffic allowing an early opening of Bypass 2. Then demolition of existing Rte67 (1080+00-1099+00) and preliminary grading for new NBL will begin allowing the complete section 1025+00-1099+00 to be paved in Stage 1. By existing design all grading and paving from 1080+00-1099+00 for NBL and SBL could not be accessed until Stage 2.

Completion of the section 1025+00-1099+00 will allow traffic to travel head to head undisturbed from Crossover #9 to the tie-in of the NBL and existing Rte 67 at 1099+00. Switching traffic back and forth at Crossover #10, then to #11, onto Bypass 2, and back again at Crossover #12 as planned by existing design will no longer be necessary. The traveling public will be forced to navigate fewer lane changes promoting a safer work zone for the traveling public and contractor. In addition the proposal will increased productivity and accelerate the completion of Stage 2 work in the crossover areas.

Value Engineering Proposal for Alteration of Stage 2 Crossovers 10, 11, and 12

Contractor: Emery Sapp & Sons INC.

Project: J0P0928 Madison Co. Rt67

Emery Sapp & Sons proposes an alteration in traffic control staging and crossover design for Crossover #10, #11, and #12 along with a striping alteration for the remaining temporary crossovers. Crossovers #10 and #11 will be eliminated while Crossover #12 is widened an additional eight feet on the southern shoulder. Temporary striping in the crossover areas requiring 4" Preformed Removable Marking Tape will be replaced with 4" Acrylic Waterborne Pavement Marking Paint. The proposed changes will simplify navigation for the traveling public by reducing the number of lane changes, increase productivity of the contractor by allowing early entry to Stage II grading, and reduce overall cost to complete by $122,037.34.

The original design requires construction of five temporary crossovers between 1010+00 and 1100+00. These crossovers allow for secondary grading where the new lanes overlap the existing roadway. Under the existing design once Stage 1 is completed traffic will be routed from undivided two lane -> divided four lane -> undivided two lane-> divided four lane again in less than two miles. Traffic will engage in four speed limit adjustments inside two miles of travel. Existing design requires completion of all Stage 1 paving before any Stage 2 traffic control measures and or grading may occur. Under existing Stage 1 design the NBL requires mandatory Stage 2 grading and paving, which increases the duration that traffic will be forced to navigate the Crossover #11 & 12/Bypass 2 corridors. Temporary striping under existing design requires 4" tape be used in areas where temporary lane changes and crossovers occur on main line pavement.

The value engineering proposal intends to eliminate the need for Crossovers #10 and #11 by altering the order of the Stage 2 traffic control sequence and widening the existing Crossover #12. By proposal, a 900 ft section of the new SBL will be paved from 1090+00-1099+00 first (prior to any other paving in the immediate area). Bypass 2 will then be paved and its' tie-ins will be completed at existing 67 and the new 900' section of SBL main line. Crossover #12 will be constructed eight feet wider than design for a total with of 28 ft in order to match that of Bypass 2 and allow room for head to head traffic. The extra material and grading required for the widening will be used from the allotted quantities for Crossover #11. Signing and other traffic control devices will be placed per a revised traffic control plan. Route 67 traffic will then be released onto the new bypass, remaining two-lane undivided.

North bound traffic now will exit Existing Rte 67 at 1101+00 left onto Crossover #12 merging onto the 900'section of new SBL. Motorist will travel north for the 900' section and veer left onto Bypass 2 at 1093+50. Once motorist travel the length of Bypass 2, they will merge back onto existing Rte 67's north bound lane at 1077+00. Traffic will remain two-lane undivided for the entire detour.

South bound traffic now will exit Existing Rte 67 right onto Bypass 2 at 1077+00, travel the length of Bypass 2 then merge left onto the new 900'of SBL at 1093+50. Once motorist have traveled the

900' of SBL they will merge left onto Crossover #12 then exit back onto the south bound lane of existing Rte 67 at 1101+00.

Moving traffic onto Bypass 2 allows for demolition of existing Rte 67 from 1082+00-1099+00 while still in Stage 1. Once existing Rte 67 is demolished grading will begin on the designed NBL and tie-in. Early access to grading for the NBL allows paving to be completed from 1025+00 to 1099+00 in the Stage 1 phase. Under existing design the pavement could only be completed to roughly 1082+00 in Stage 1, resulting in additional Stage 2 work and requiring Crossover #11. Paving is scheduled to start on the north end of project moving south. As a result all Stage 1 paving necessary for constructing Crossovers #8 and #9 will be complete once section 1025+00-1099+00 is finished.

While the paving spread continues south on the remaining Stage 1 section of SBL 1099+00-1333+00, Crossovers#8 and #9 will be completed and all traffic control devices will be installed. Temporary striping for head to head traffic will be placed at center line and inner lane of the NBL from Crossover #9 to 1104+00, while the outer shoulder will be striped with permanent markings. Now Bypass 2 can be closed rerouting traffic directly onto the new NBL from 1025+00-1099+00. Eliminating Crossover #10 and #11 will prevent traffic from navigating Bypass 2 and an additional three crossovers (#10, #11, and#12) that are no longer necessary. By proposal traffic will travel head to head undisrupted from Crossover #9 to the end of the project. Fewer lane changes will result in less confusion to the traveling public, increase safety in the work zone, eliminate maintenance on additional traffic control devices, and reduce total cost to complete.

Bypass 2 can now be demolished allowing remaining section of the SBL 1077+00-1099+00 to be graded and paved in Stage 2. Completing the Stage1 and Stage 2 work in the proposed order will result in smoother and more efficient transition to final design.

Temporary striping for the crossover and lane transition areas currently requires a combination of 4" Preformed Removable Marking Tape and 4" Acrylic Waterborne Pavement Marking Paint. Emery Sapp & Sons proposes all temporary striping be performed with the acrylic waterborne paint. The removable tape tends to lose adhesion over time causing striping fail under live traffic. In order to correct the failing tape traffic must be stopped due to the narrow travel conditions of the crossover. In addition to being more cost effective the acrylic waterborne eliminates the need for long term maintenance creating safer more durable travel ways.

In conclusion the value engineered proposal will eliminate the need for Crossovers #10 & #11 while reducing temporary striping cost creating $115,109.34 of savings in construction costs. Temporary striping alterations reduce cost while increasing safety and durability in transitions areas. Alteration to Crossover #12 will allow for early grading on Stage 2 work, which in turn leads extended paving possibilities for Stage 1. Completion of additional paving on Stage 1 eliminates the need for Bypass 2 allowing grading access sooner on Stage 2 work for the SBL. Closure of Bypass 2 also decreases lane changes for the traveling public, reduces overall length of traffic interference, and creates safer work zone conditions for motorist and the contractor.

VALUE ENGINEERING CHECK SHEET

TYPE OF WORK

(Check one that applies)

- ☐ Bridge/Structure/Footings
- ☐ Drainage Structures (RCP, RCB, CMP's, ect.)
- X TCP/MOT
- ☐ Paving (PCCP, ect.)
- ☐ Grading/MSE Walls
- ☐ Signal/Lighting/ITS
- ☐ Misc. _____

SUMMARY OF PROPOSAL

(If needed, condense summary to a couple of lines)

Changes temporary striping from tape to paint. Also eliminates 2 temporary crossovers.

SCANNING OF DOCUMENT

If the proposal is large, please mark or make note, which pages need to be scanned into the database. If there are special instructions, make note of them here.

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